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CONFERENCE ™

summer camp for geeks

2013 

# Platinum Sponsors



# Gold Sponsors



# PACKING SKILLS TO BE A DEVOPS



ThatConference - August 14th - Wisconsin Dells (USA)

# OLE MICHAELIS



 @CodeStars

 [github.com/nesQuick](https://github.com/nesQuick)

 [codestars.eu](http://codestars.eu)



# OLE MICHAELIS

 @CodeStars

 [github.com/nesQuick](https://github.com/nesQuick)

 [codestars.eu](http://codestars.eu)

so coded

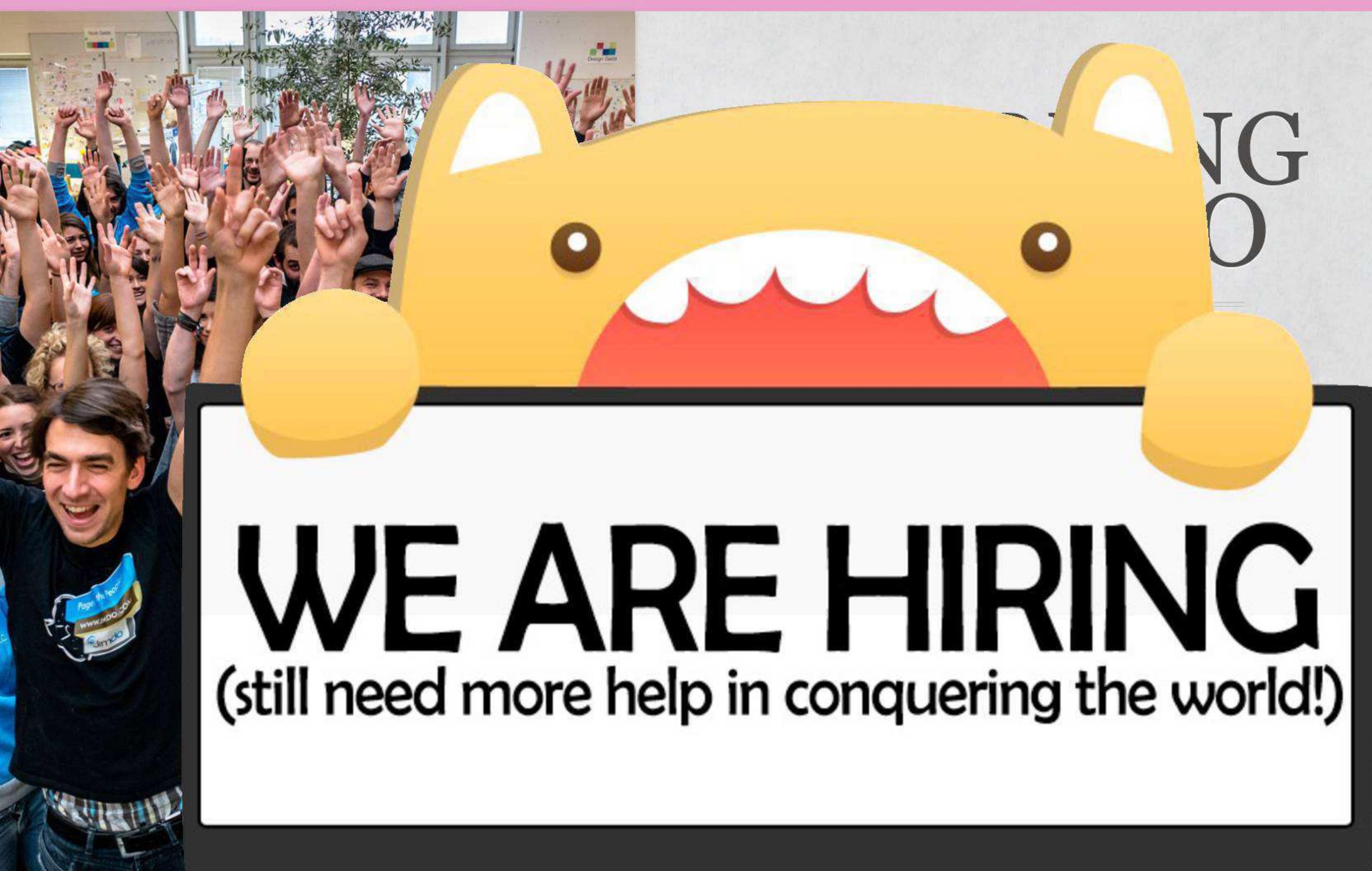




# WORKING @JIMDO



“Open Source Rockstar”



**WE ARE HIRING**  
(still need more help in conquering the world!)

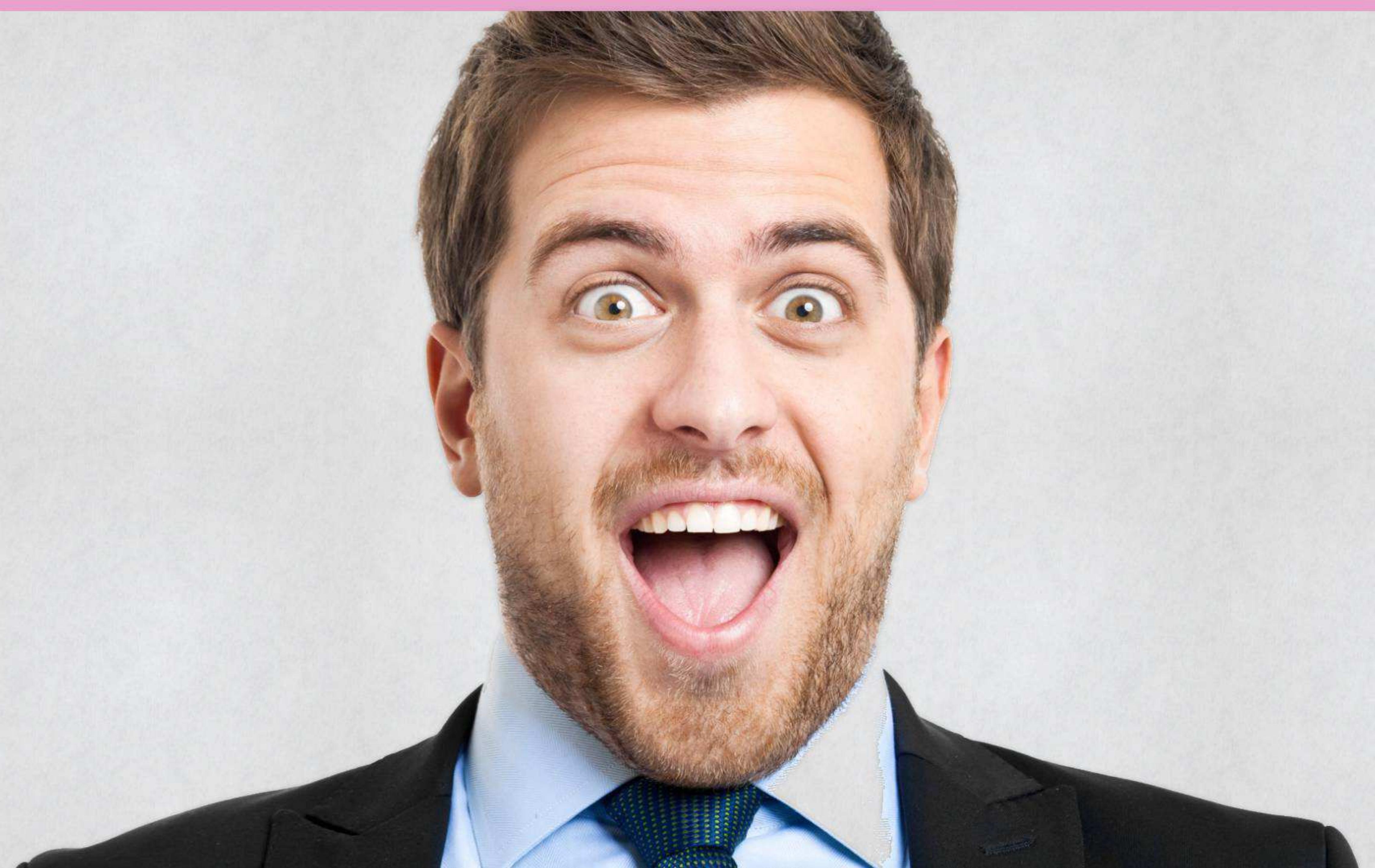


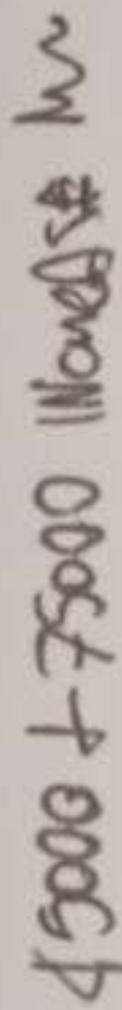
# WORKING @JIMDO



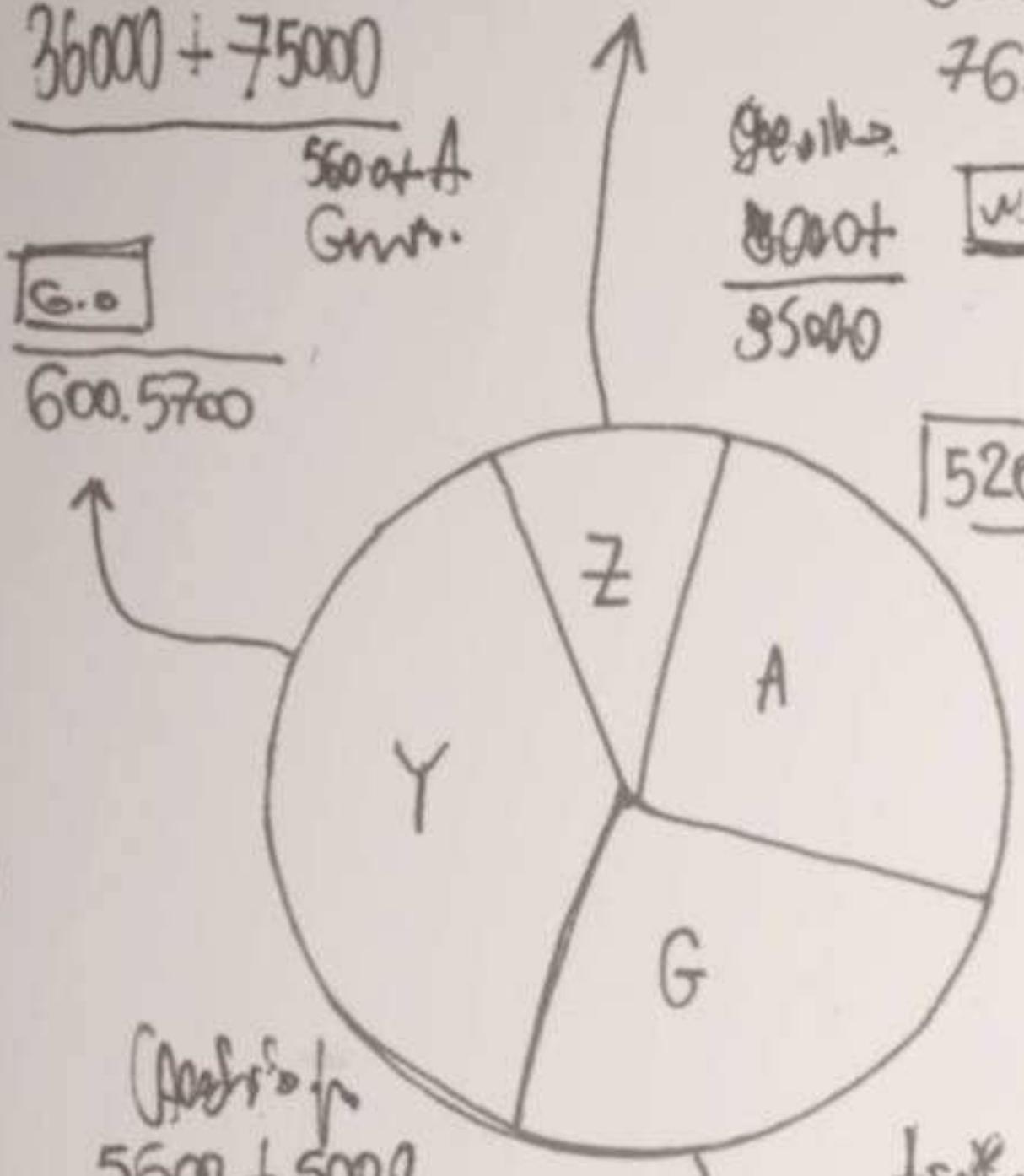
“Open Source Rockstar”

# MY DEVOPS STORY

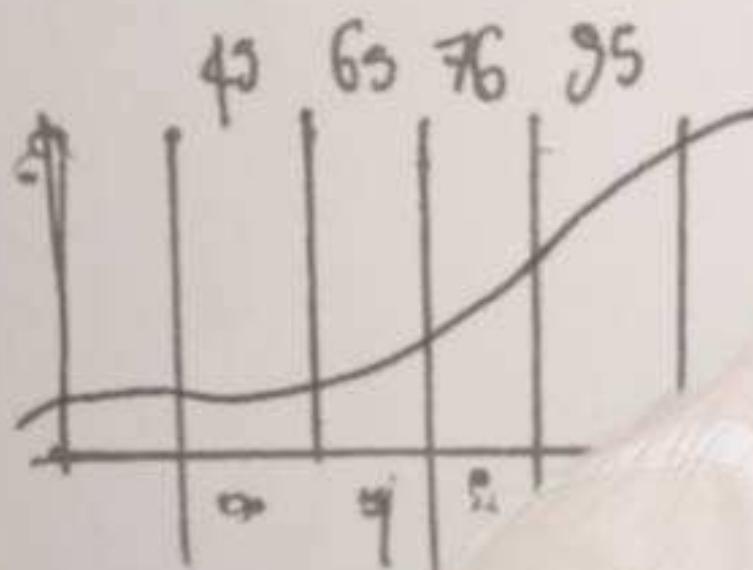




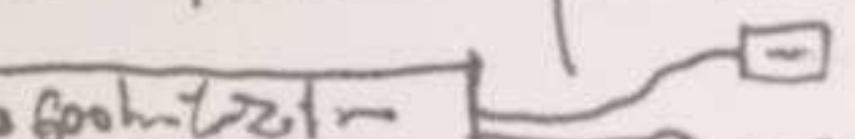
$$\begin{array}{r}
 36000 \div 75000 \\
 \hline
 560 \text{ at } 4 \\
 \text{Gross...} \\
 \boxed{6.0} \\
 \hline
 600.5700
 \end{array}$$



(Ass'ts) Jr.  
5600 + 5000  
6000 + 5000  
62000 + 6000  
75000 + 4200



76.000 + 43000 5 (MBR 5600 103000; x 1,05) am 75000  
Gesamtk.  
8000  
35000  
W+G-Guth-Lzst-  
Total: 564.015 (7000 103000 25%)

W+3 Cash-in-Box            GMPCo C.  
Total ~~Excl~~ ~~Incl~~ : 564.015 (Tax incl 25%)

$$5200 \rightarrow 150647 + 456489 + 56000 + 18567$$

Ans: 96  $\boxed{1}$  1156 + 54.000  $\boxed{45670}$

A close-up photograph of a man's face, focusing on his right eye and forehead. He has short brown hair and is looking directly at the camera with a neutral expression. The lighting is soft, highlighting the contours of his face.

0

600

3000

A close-up photograph showing the lower part of a man's face, his neck, and the top of his shoulder. He has dark hair and a beard. He is wearing a light-colored, possibly white, collared shirt. The lighting is soft, highlighting the texture of his skin and hair.

...and the other side of the world.

A close-up photograph of a dark, textured surface, possibly a book cover or endpaper, showing a vertical crease and some wear.

A close-up photograph showing a white dress shirt cuff and a dark, possibly black or dark brown, necktie. The shirt has a visible buttonhole and a white button. The tie is neatly knotted.

100% of C. 75000  
GMPs C.  
100% 25%)

$$\begin{array}{r} 56000 + 18567 \\ + 54,000 \\ \hline 456700 \end{array}$$

1310 1 [BD] 56700

176 (45)  
75.000

+ 62.00

+ 41.000

AC

速  
62000

- 64569 + 6 =
- Small steps in finding 80
- 45670 + 756000

$$\begin{array}{r} \boxed{C} \\ 65600 + 850000 \\ 80004 + 720000 \\ 72 + 950 \end{array}$$

$$\begin{array}{r}
 \text{kilometer} \\
 \text{meter} \\
 \text{millimeter} \\
 \text{centimeter} \\
 \text{millimeter} \\
 \hline
 456000 \quad | \text{m} \\
 \boxed{\div} \\
 \hline
 \end{array}$$

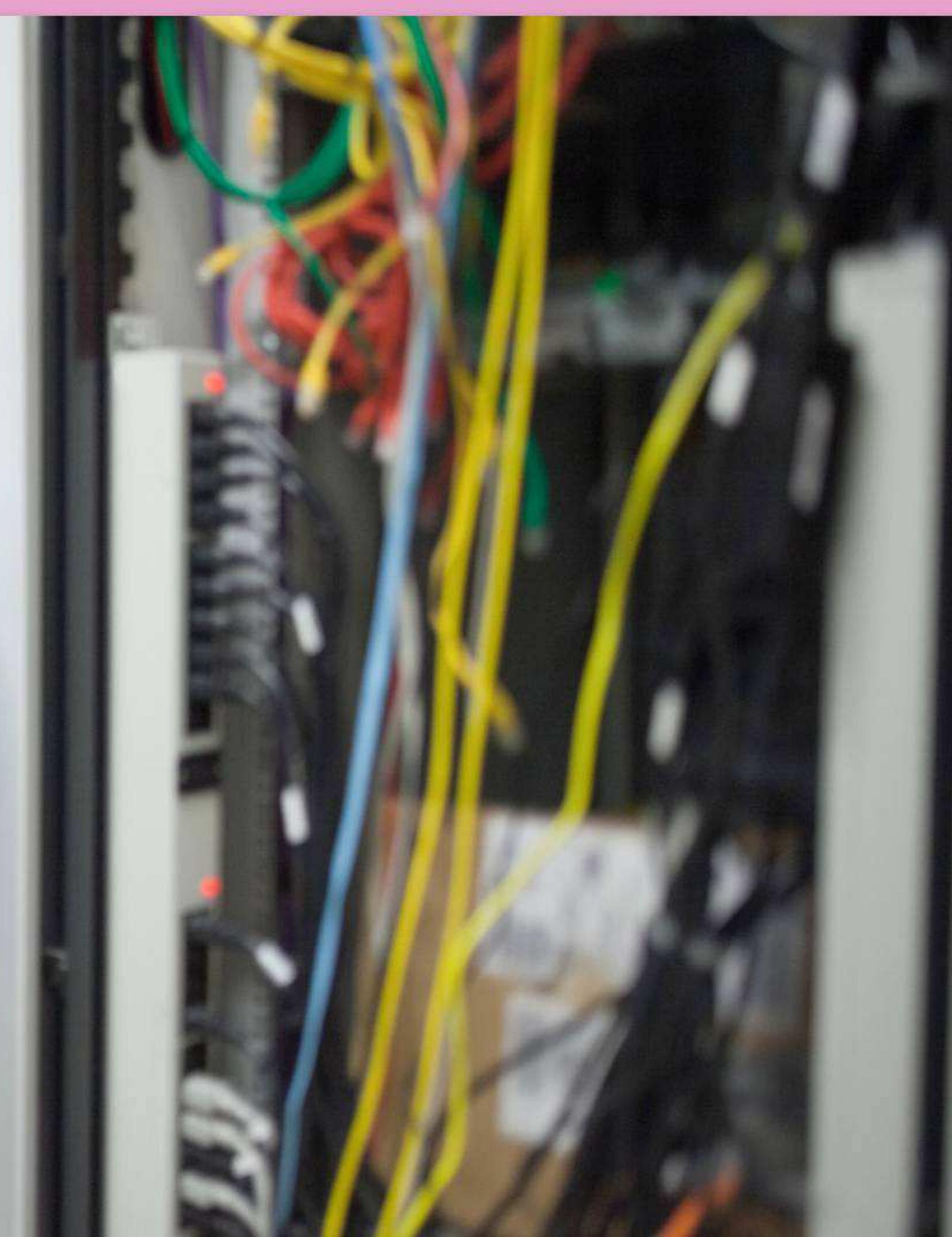
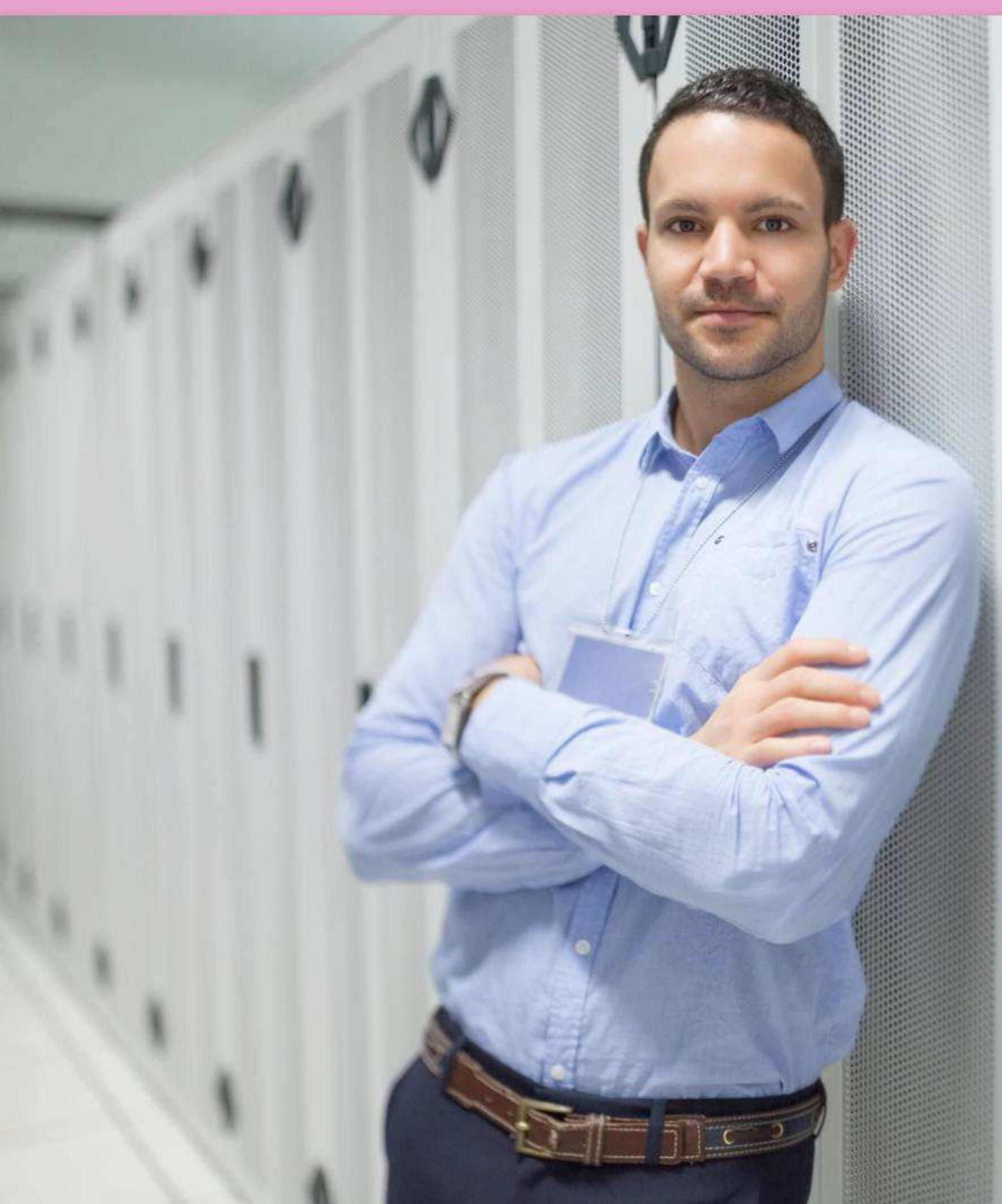
(5,000,000 + 76,000)

$$\begin{array}{r} 47600 + 7500 \\ 62000 + 62100 \end{array}$$

56000 ♂

A schematic diagram showing a connection between two terminals. Terminal G is located on the left side of the page, and terminal C is located on the right side. A line connects the two terminals.

+ 73000 + 45000





# WHY IS IT GOOD?



# WHY IS IT GOOD?

- ✓ dedicated technical-debt team



# WHY IS IT GOOD?

---

- ✓ dedicated technical-debt team
- ✓ making others faster



# WHY IS IT GOOD?

---

- ✓ dedicated technical-debt team
- ✓ making others faster
- ✓ cross-functional



# WHY IS IT GOOD?

---

- ✓ dedicated technical-debt team
- ✓ making others faster
- ✓ cross-functional
- ✓ full-stack engineering

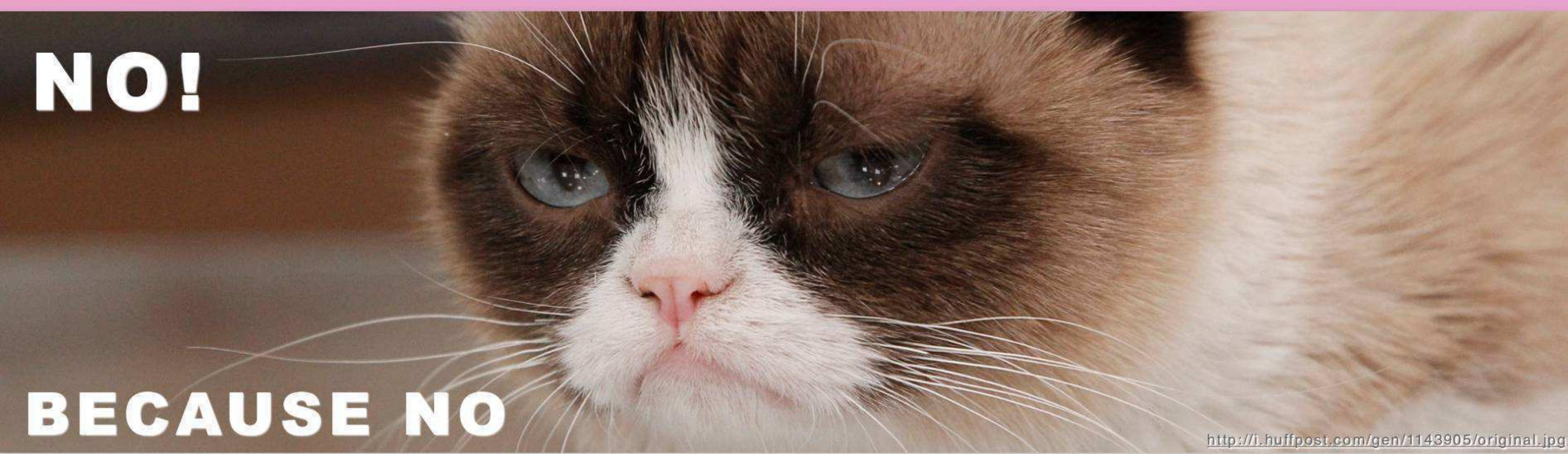


LET'S TRY  
TO DEFINE  
DEVOPS

# YOU BUILD IT, YOU RUN IT!



“The DevOps prime directive”



**NO!**

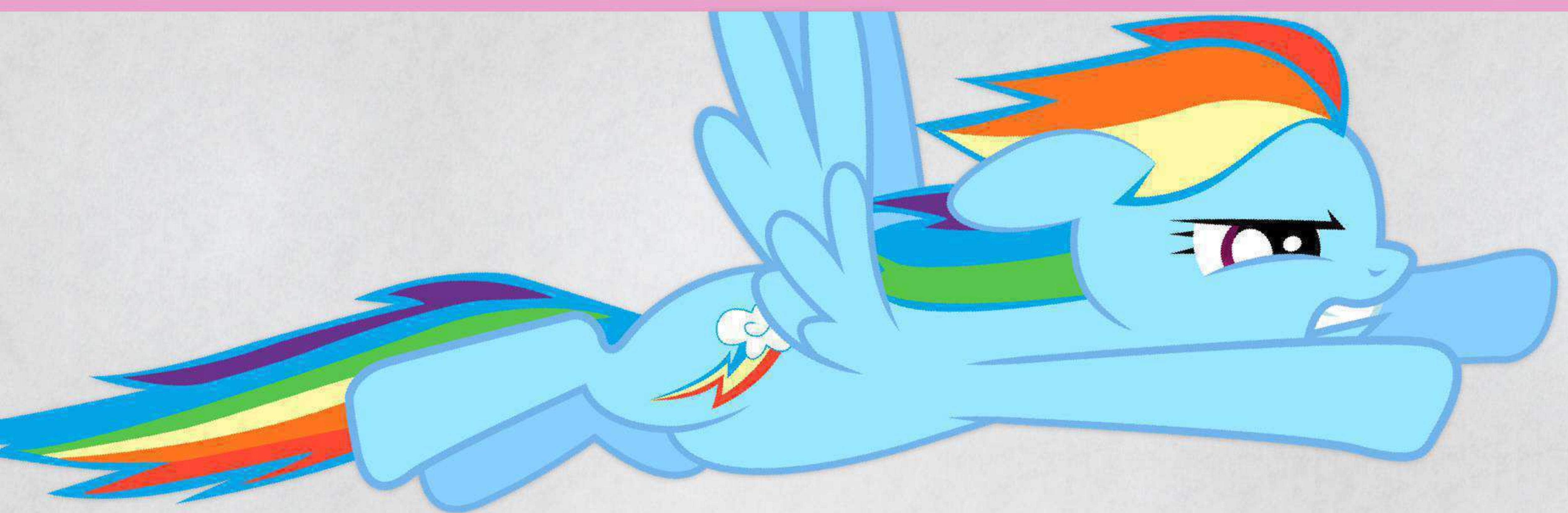
**BECAUSE NO**

<http://i.huffpost.com/gen/1143905/original.jpg>

# ANTI-PATTERNS



“You are doing it wrong!”



# ANTI-ANTI-PATTERNS



“Ahhh... better!”

BECOME A  
DEVOPS



EXTEND  
YOUR  
DEV SKILLS



~~S.T.U.P.H.D.~~

S.O.L.I.D.

# PATTERNS



- ❖ creational
- ❖ behavioral
- ❖ structural

# TEST-DRIVEN- DEVELOPMENT



- △ tests first
- △ know “the circle”
- △ different tests

# TEST-DRIVEN- DEVELOPMENT



- △ tests first
- △ know “the circle”
- △ different tests, are different

# REFACTORING



- you must walk through hell
- tests, tests, tests (BDD, Integration tests)
- branch by abstraction

# OPEN SOURCE



- » working with upstream
- » do not patch the framework
- » join the community & gather credits

# SOFTWARE ARCHITECTURE



- ❖ challenge: do it distributed
- ❖ SOA
- ❖ REST

# KNOW THE PITFALLS

---



- ① wrong expectations
- ① “hipster” technologies
- ① 2nd system effect

# GATHER OPS KNOWLEDGE



# SOME HANDY SHELL KNOWLEDGE

---



- ☒ you should feel comfy in a terminal
- ☒ #protip: use a terminal in your daily work

# UPDATE MANAGEMENT



- ⬇️ version pinning
- ⬇️ staging systems

# RISK MANAGEMENT



- ⚠ how often does a problem occur?
- ⚠ how much is the impact?
- ⚠ what is the mean time to repair?

# PROTOCOLS OF THE WEB



- HTTP
- TCP / UDP
- IP

# THE 4 BOTTLENECKS





1 ns

# L1 CACHE REFERENCE



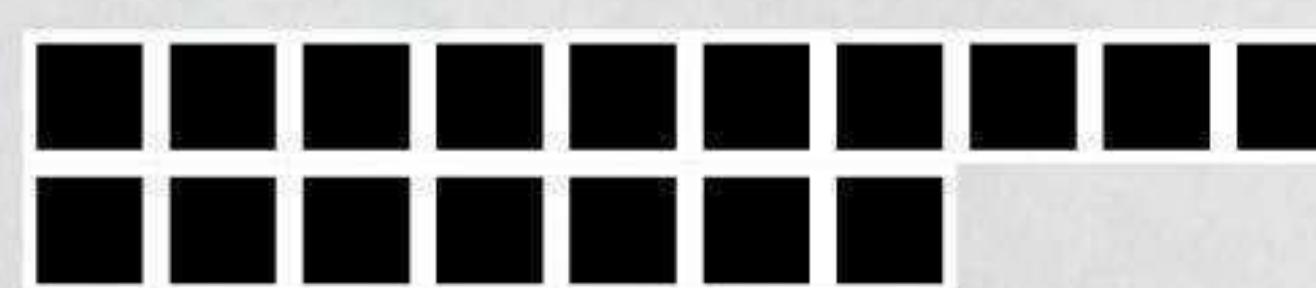
■ 1 ns

# L2 CACHE REFERENCE



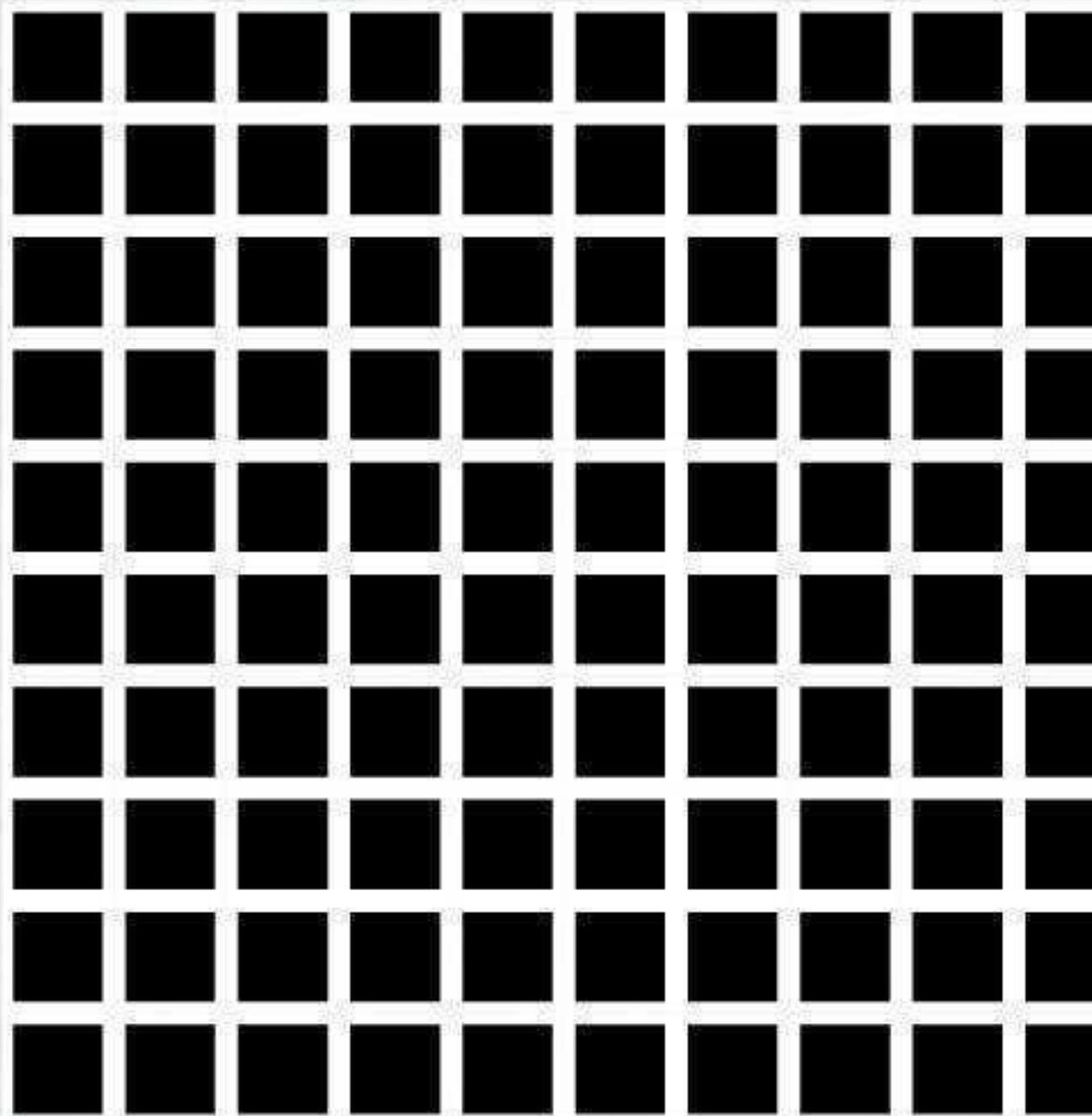
■ 1 ns

# MUTEX LOCK/UNLOCK



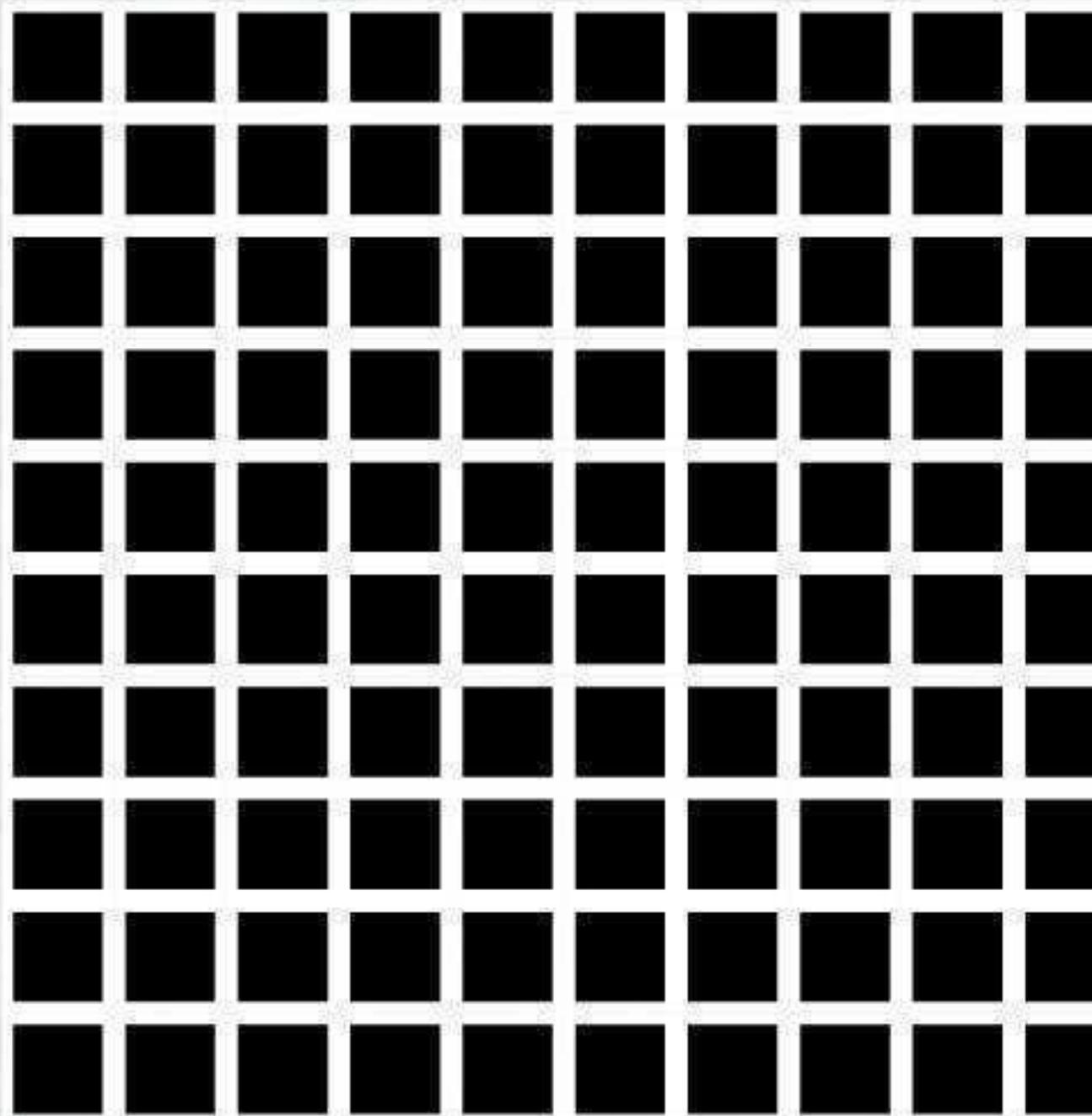
■ 1 ns

# MAIN MEMORY REF.



■ 1 ns

# MAIN MEMORY REF.



■ 1 ns

# MAIN MEMORY REF.



■ 1 ns

■ 100ns ~ 0.1 $\mu$ s

# MAIN MEMORY REF.

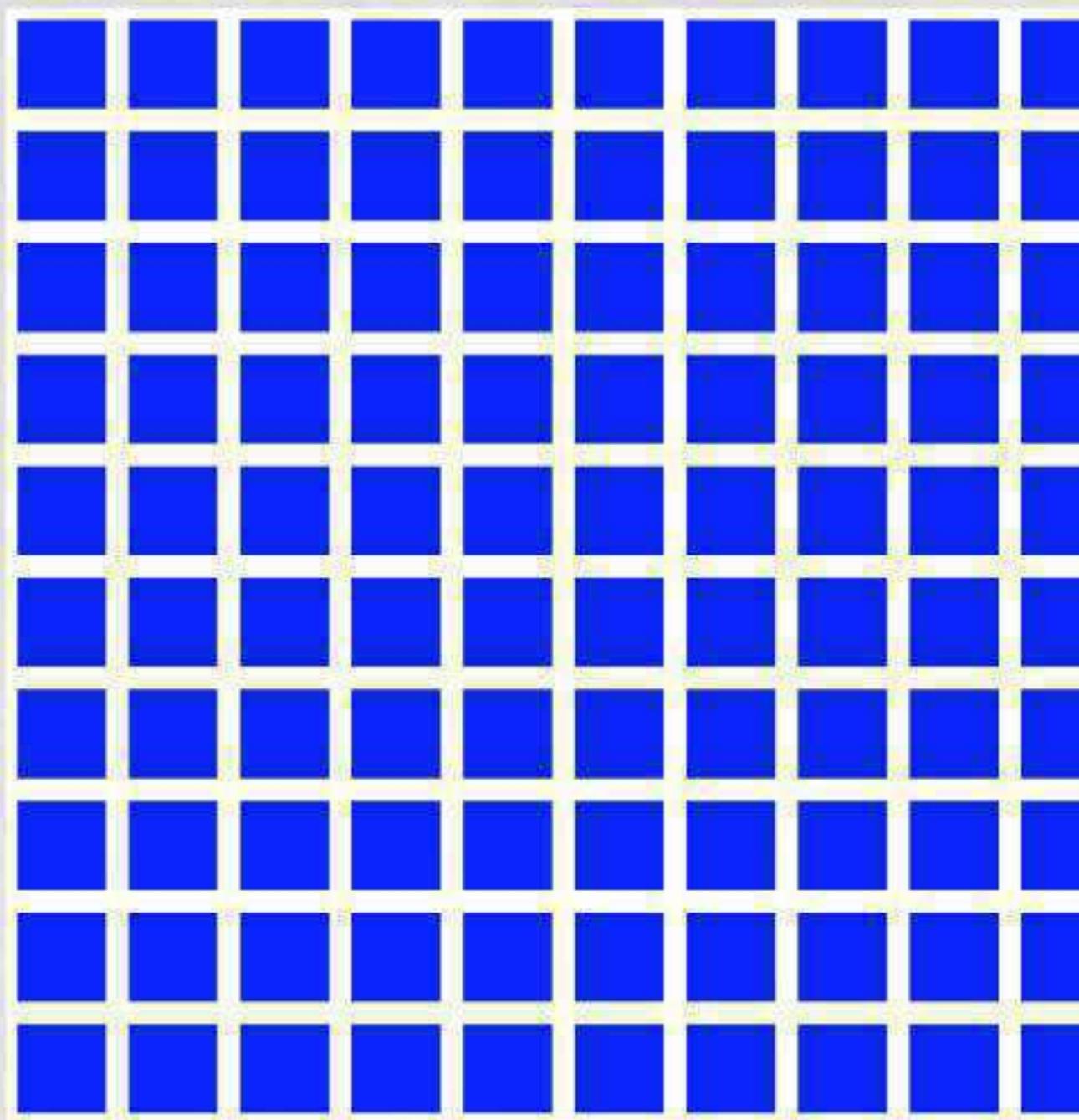
- 
- 
- 1ns
  - 100ns ~ 0.1μs

# SEND 2KB OVER COMMODITY NETWORK

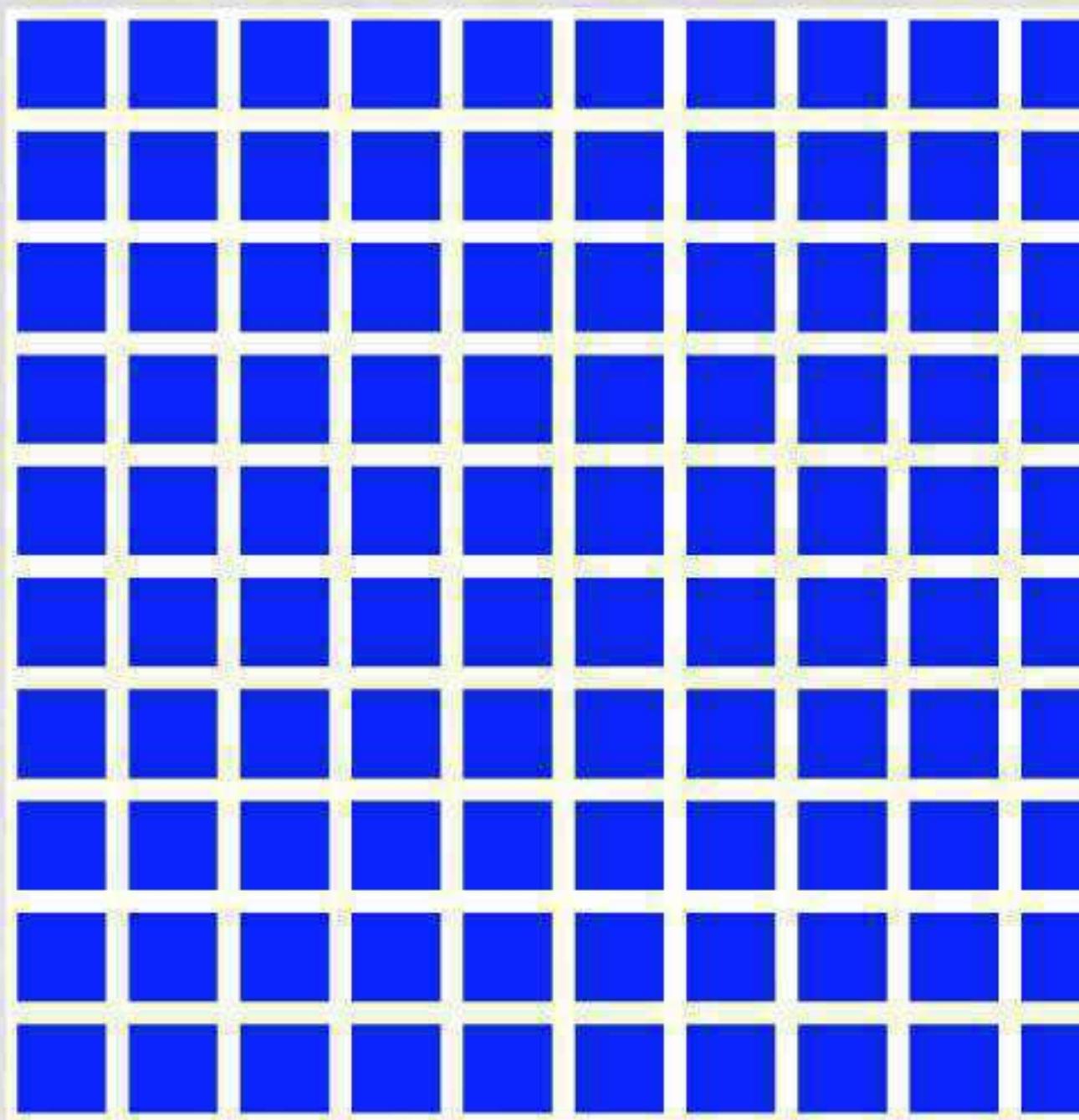


# COMPRESS 1KB/W ZIPPY





- 1 ns
- 100ns ~ 0.1 μs



- 1 ns
- 100ns ~ 0.1  $\mu$ s



■ 1 ns

■ 100 ns ~ 0.1  $\mu$ s

■ 10,000 ns ~ 10  $\mu$ s

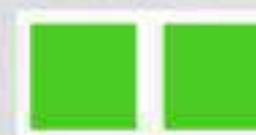


■ 1 ns

■ 100 ns ~ 0.1  $\mu$ s

■ 10,000 ns ~ 10  $\mu$ s

# READ 1MB SEQ. FROM MEMORY

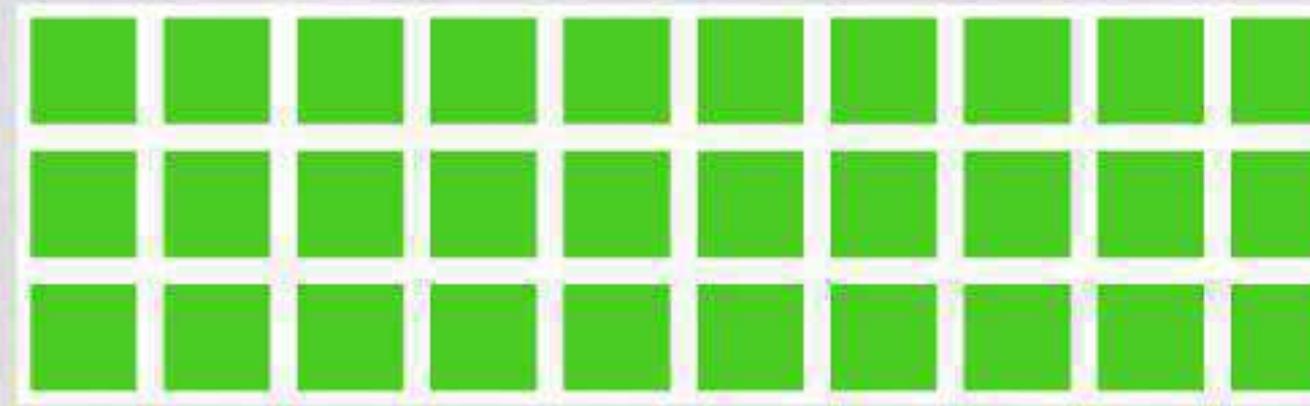


■ 1 ns

■ 100ns ~ 0.1  $\mu$ s

■ 10,000ns ~ 10  $\mu$ s

# READ 1MB SEQ. FROM SSD

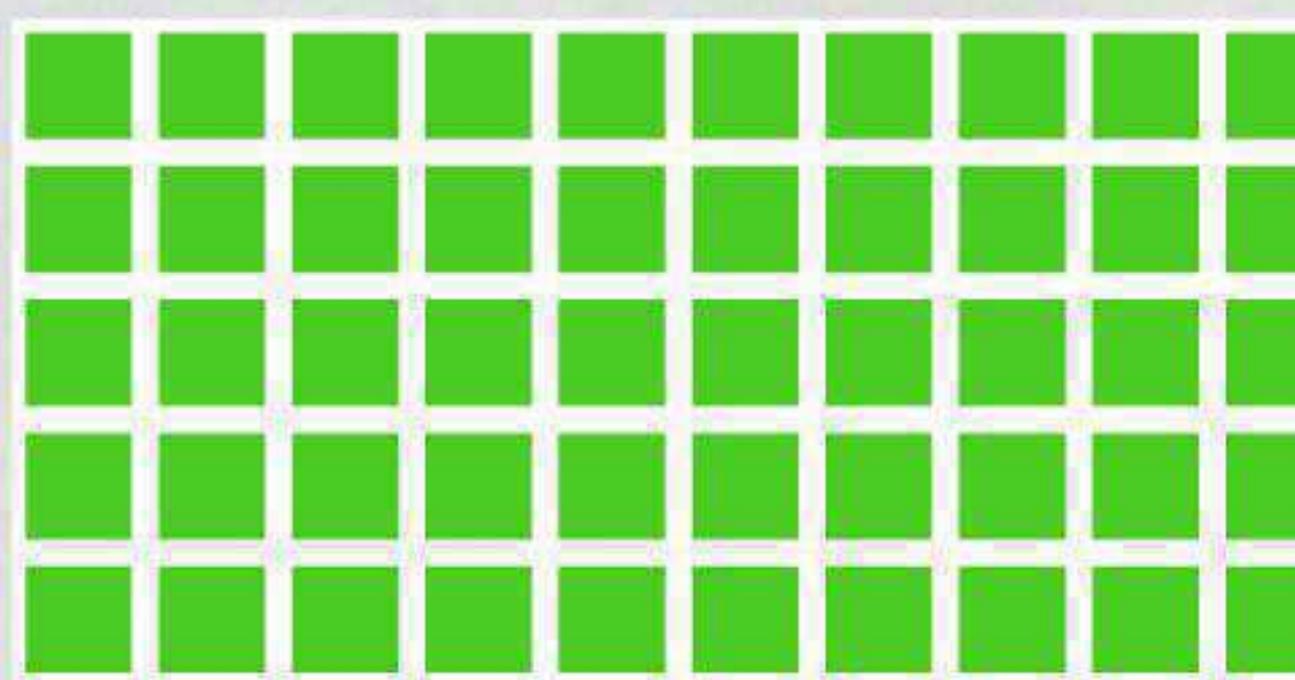


■ 1 ns

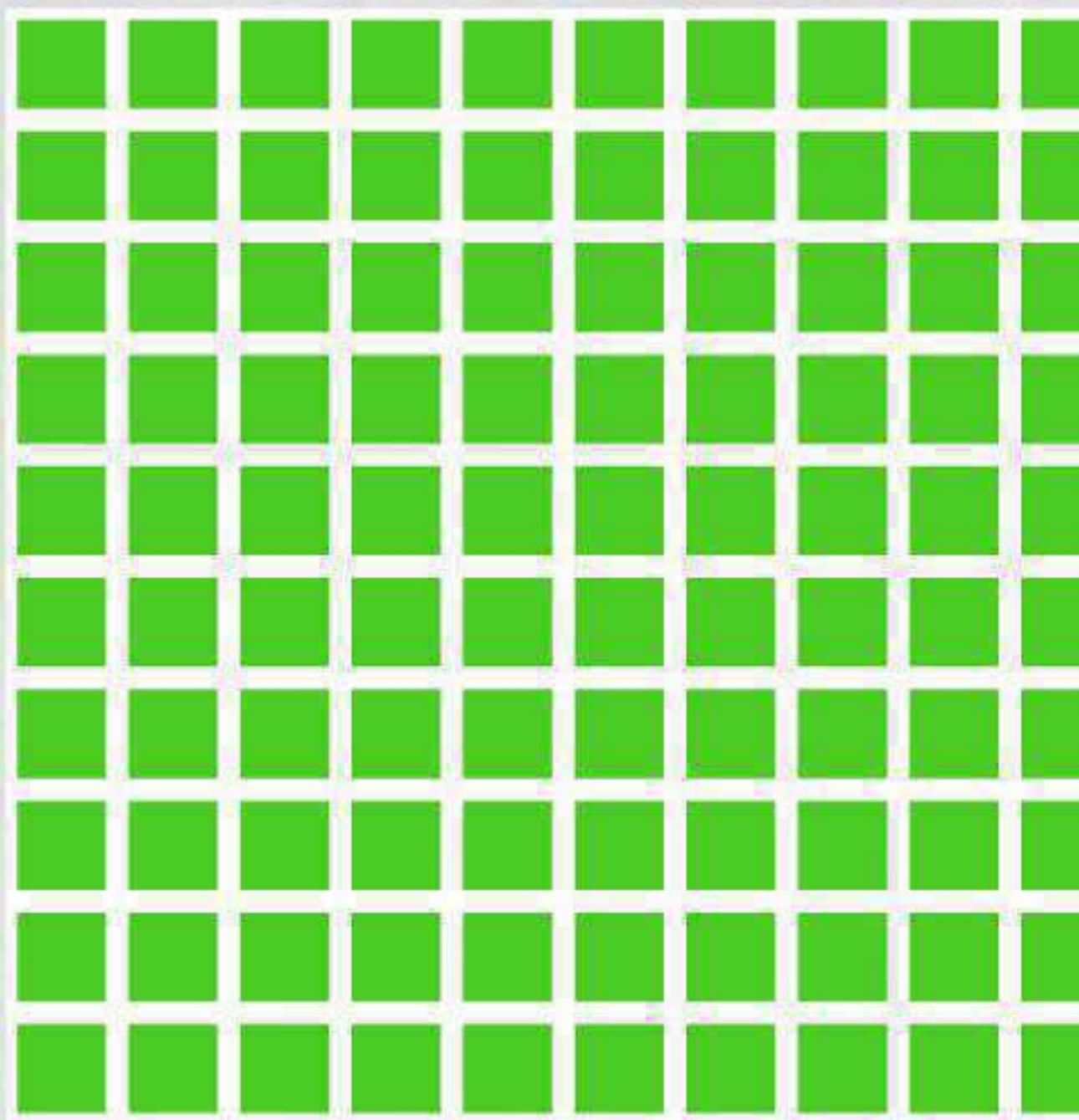
■ 100ns ~ 0.1 μs

■ 10,000ns ~ 10μs

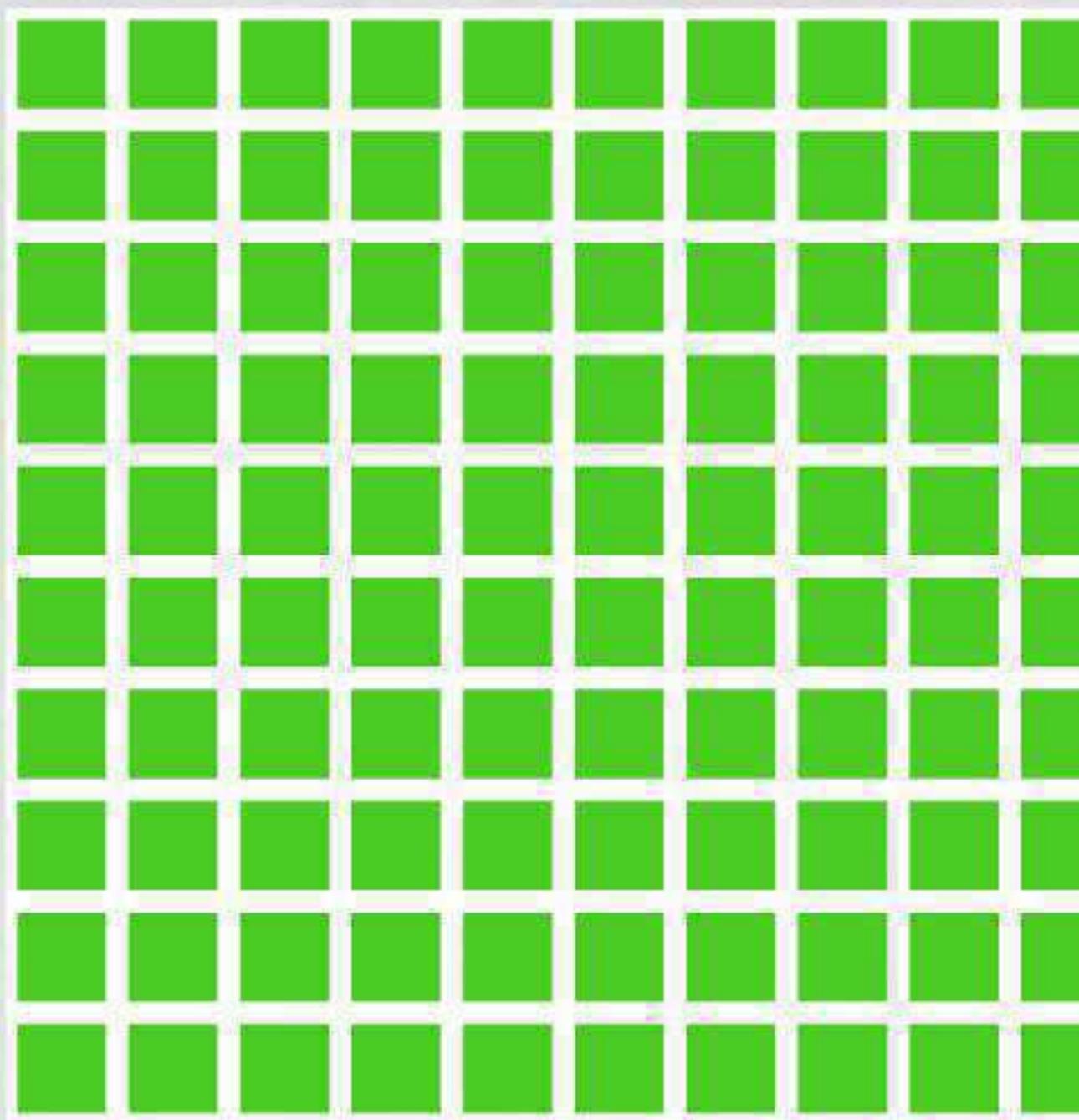
# ROUND TRIP IN SAME DATACENTER



- 1 ns
- 100ns ~ 0.1  $\mu$ s
- 10,000ns ~ 10  $\mu$ s



- 1 ns
- 100ns ~ 0.1  $\mu$ s
- 10,000ns ~ 10  $\mu$ s



- 1 ns
- 100ns ~ 0.1  $\mu$ s
- 10,000ns ~ 10  $\mu$ s



■ 1ns

■ 100ns ~ 0.1μs

■ 10,000ns ~ 10μs

■ 1,000,000ns ~ 1ms



■ 1ns

■ 100ns ~ 0.1μs

■ 10,000ns ~ 10μs

■ 1,000,000ns ~ 1ms

# READ 1MB SEQ. FROM DISK



■ 1 ns

■ 100ns ~ 0.1  $\mu$ s

■ 10,000ns ~ 10  $\mu$ s

■ 1,000,000ns ~ 1ms

# DISK SEEK



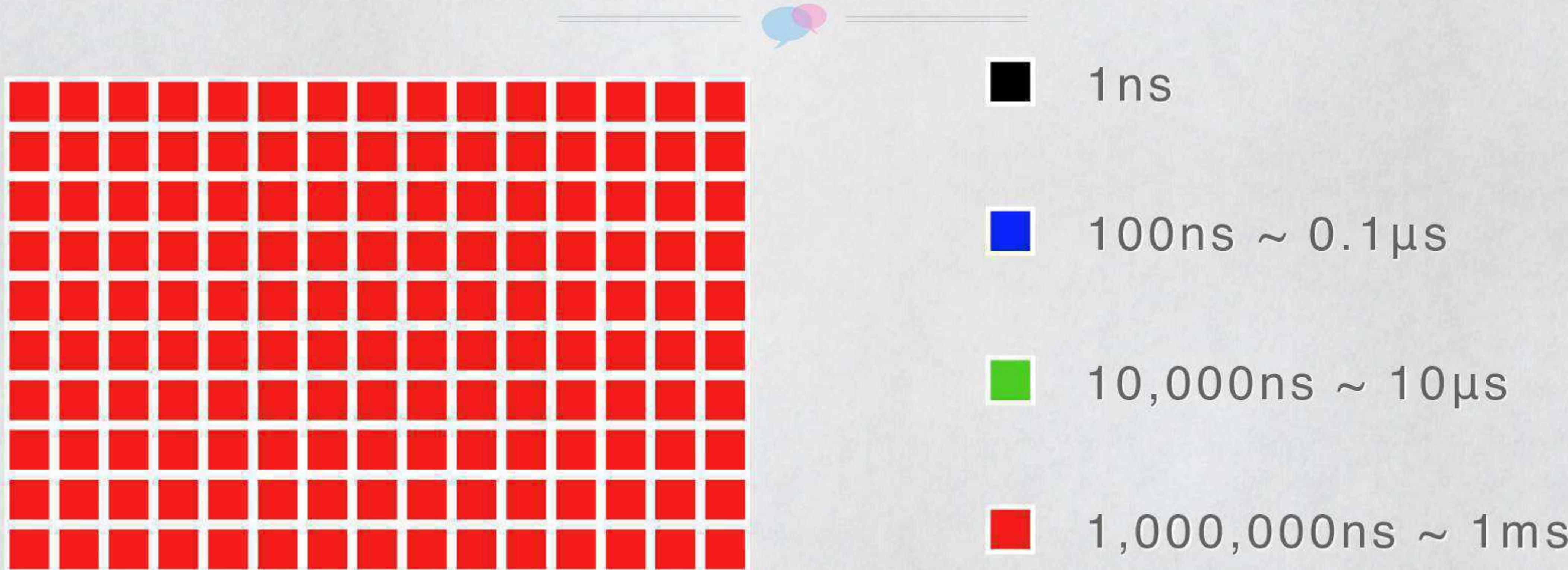
■ 1ns

■ 100ns ~ 0.1μs

■ 10,000ns ~ 10μs

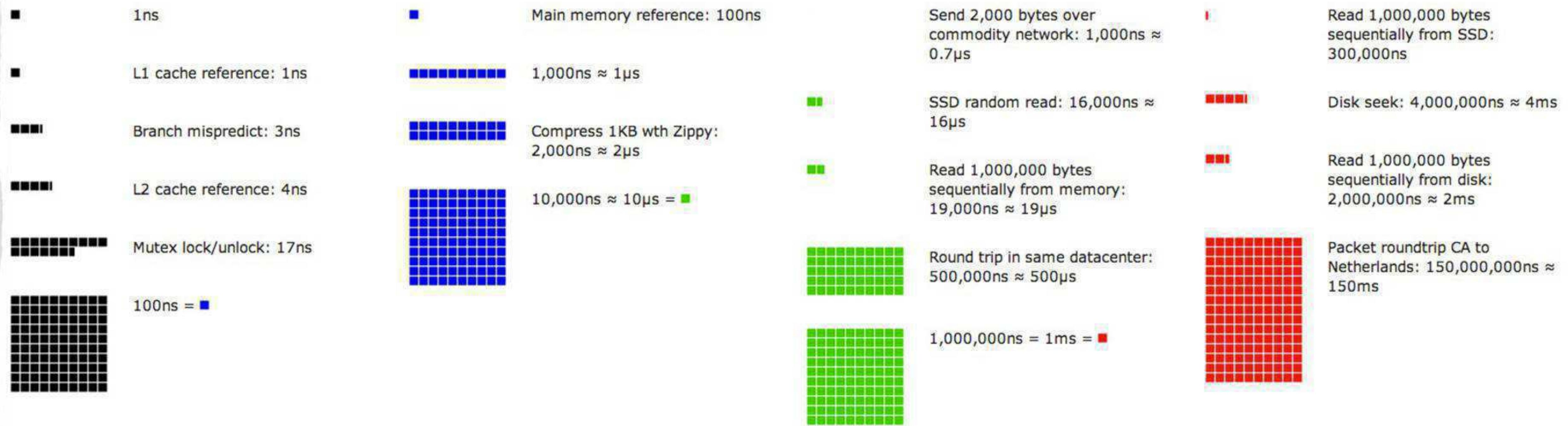
■ 1,000,000ns ~ 1ms

# PACKET ROUNDTRIP CA TO NETHERLANDS



## Latency Numbers Every Programmer Should Know

2012



[http://www.eecs.berkeley.edu/~rcs/research/interactive\\_latency.html](http://www.eecs.berkeley.edu/~rcs/research/interactive_latency.html)

# INCIDENT MANAGEMENT



- 🔥 what's the problem?
- 🔥 what causes it?
- 🔥 how to fix it?

# BEING ON-CALL

- 
- 
- ➊ keep calm!
  - ➋ important things first
  - ➌ first in, first out, but...

TOPICS YOU  
MIGHT CARE  
ABOUT

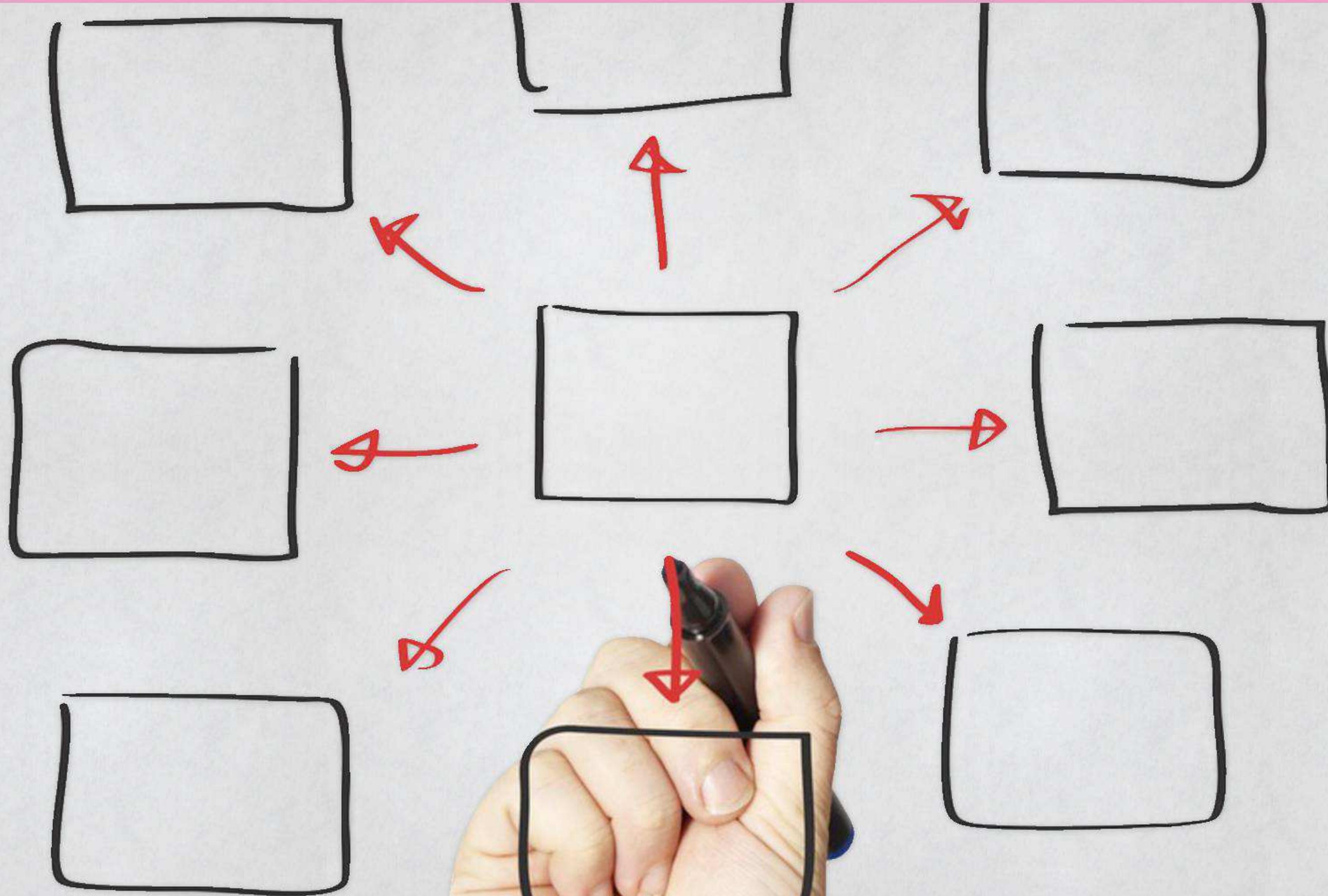
A young boy with short brown hair is sitting at a desk, looking up and stretching his arms behind his head. He is wearing a blue denim shirt over a plaid long-sleeved shirt and white pants. On the desk in front of him are several books and papers.

\* AS A  
SERVICE



# DEPLOYMENT





# CONTINUOUS DELIVERY

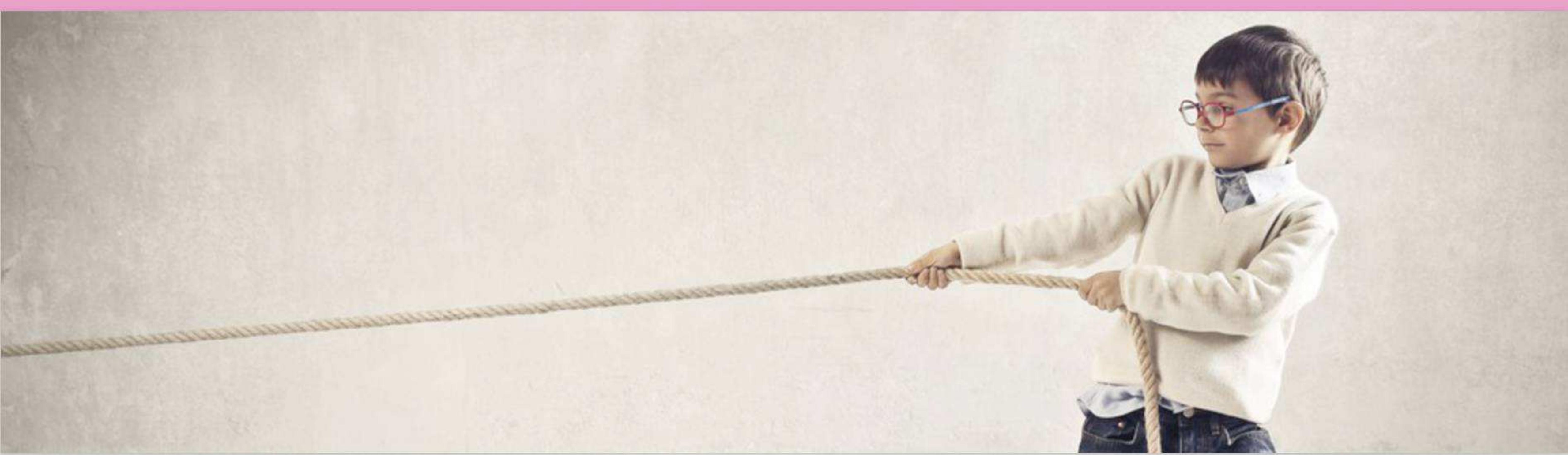


Ship when it's done!

# CONTINUOUS DEPLOYMENT



Shipin' all the time!



# PULL DEPLOY



Stop pushing, start pulling!

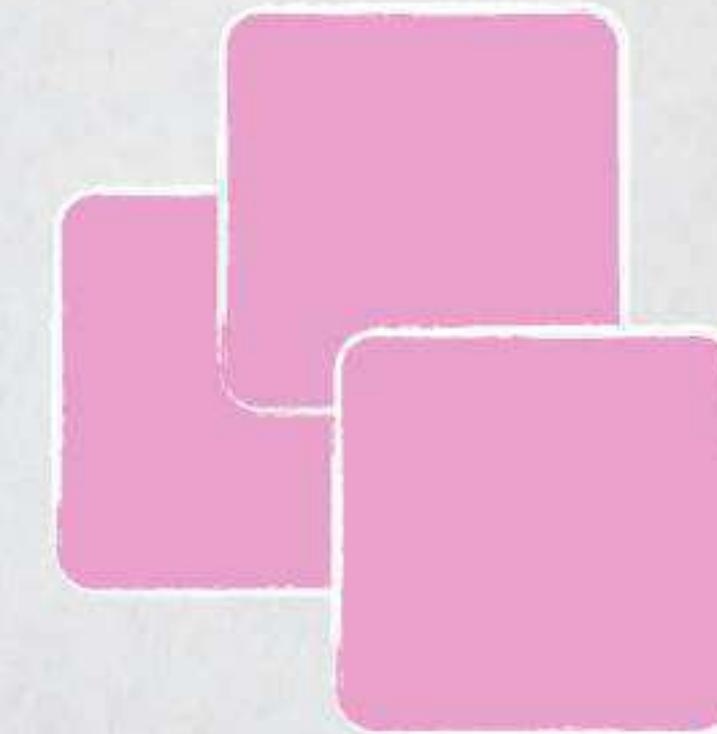
# STRATEGIES

ONE, SOME, MANY

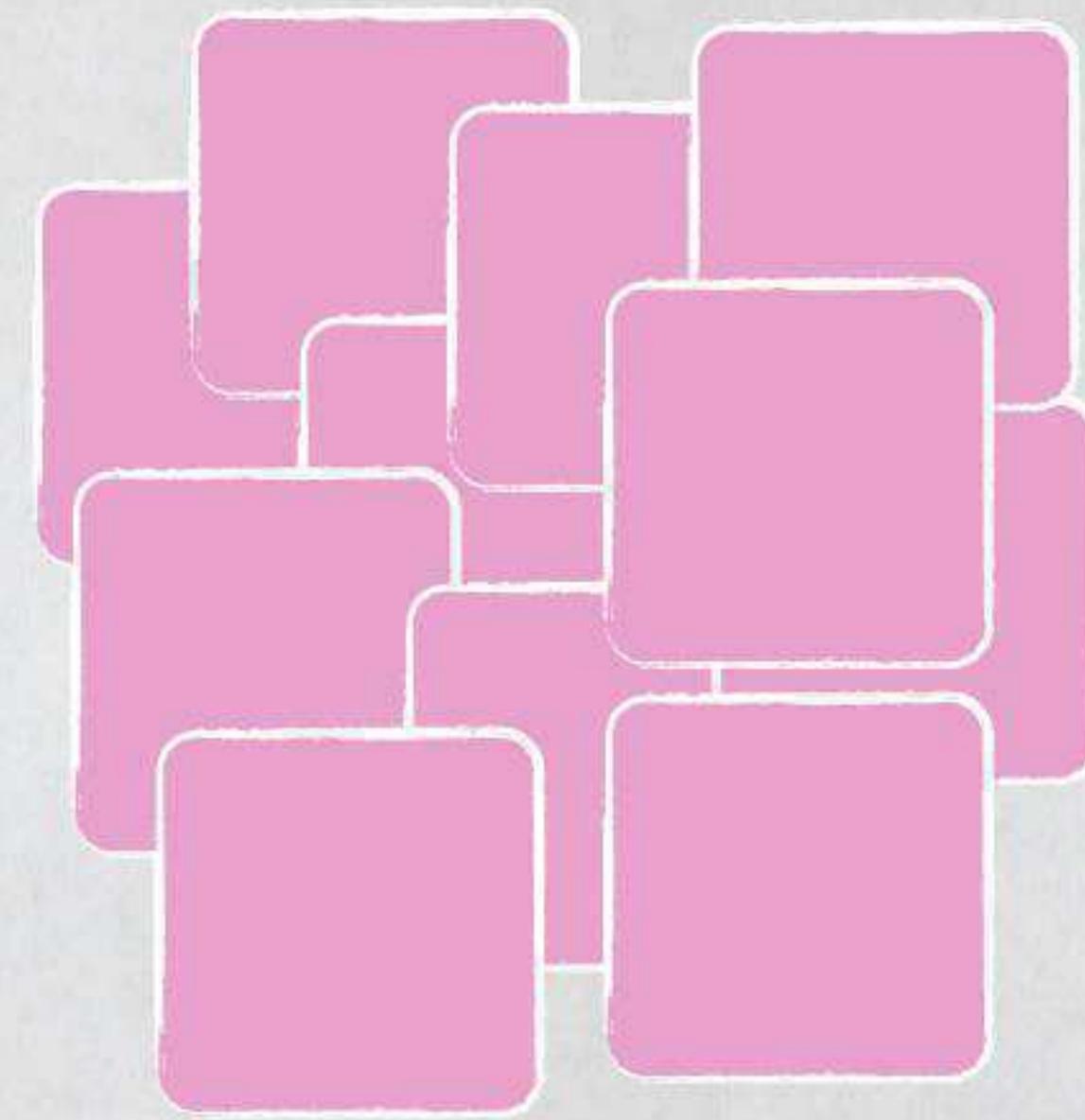
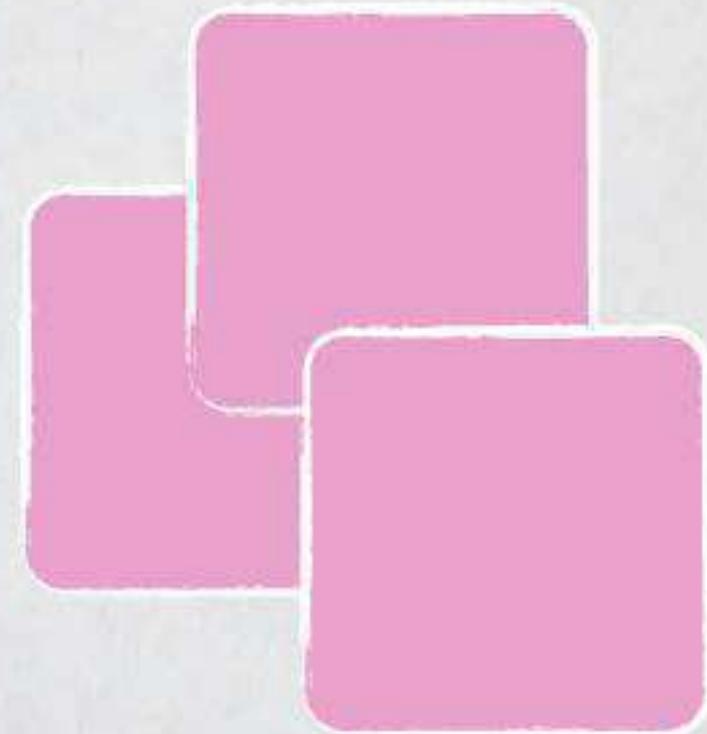
# ONE, SOME, MANY



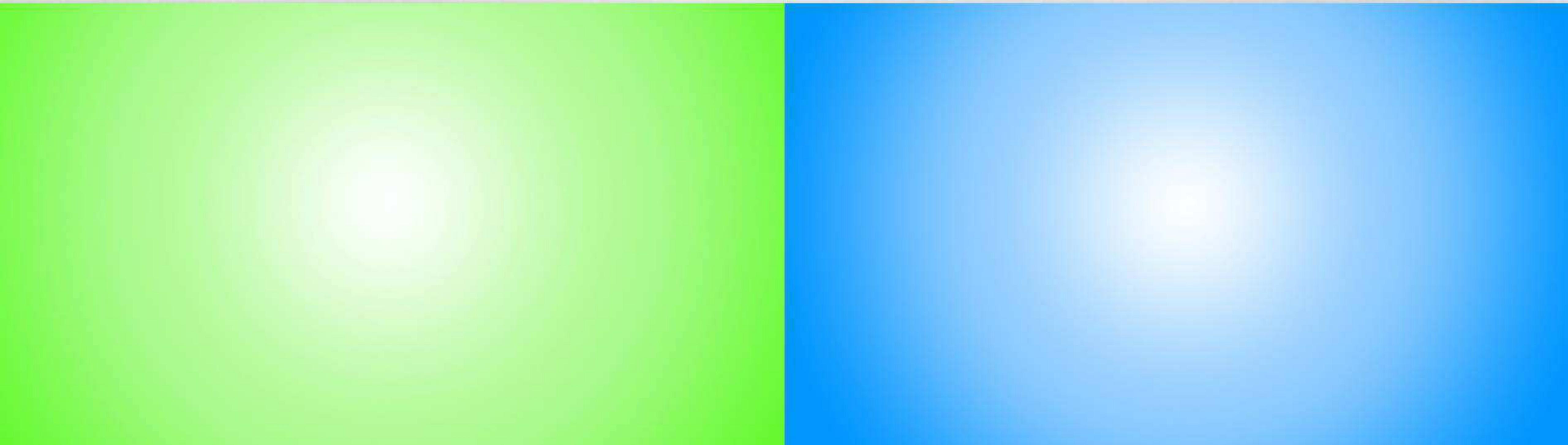
# ONE, SOME, MANY



# ONE, SOME, MANY



# GREEN / BLUE





# METRICS

---



# SYSTEM VS. APPLICATION

# WHAT TO MEASURE?



# WHAT TO MEASURE?

- 
- 
- ✓ requests

# WHAT TO MEASURE?



- ✓ requests
- ✓ querys

# WHAT TO MEASURE?



- ✓ requests
- ✓ querys
- ✓ exceptions

# WHAT TO MEASURE?



- ✓ requests
- ✓ querys
- ✓ exceptions
- ✓ connections

# WHAT TO MEASURE?



- ✓ requests
- ✓ querys
- ✓ exceptions
- ✓ connections
- ✓ user

# WHAT TO MEASURE?



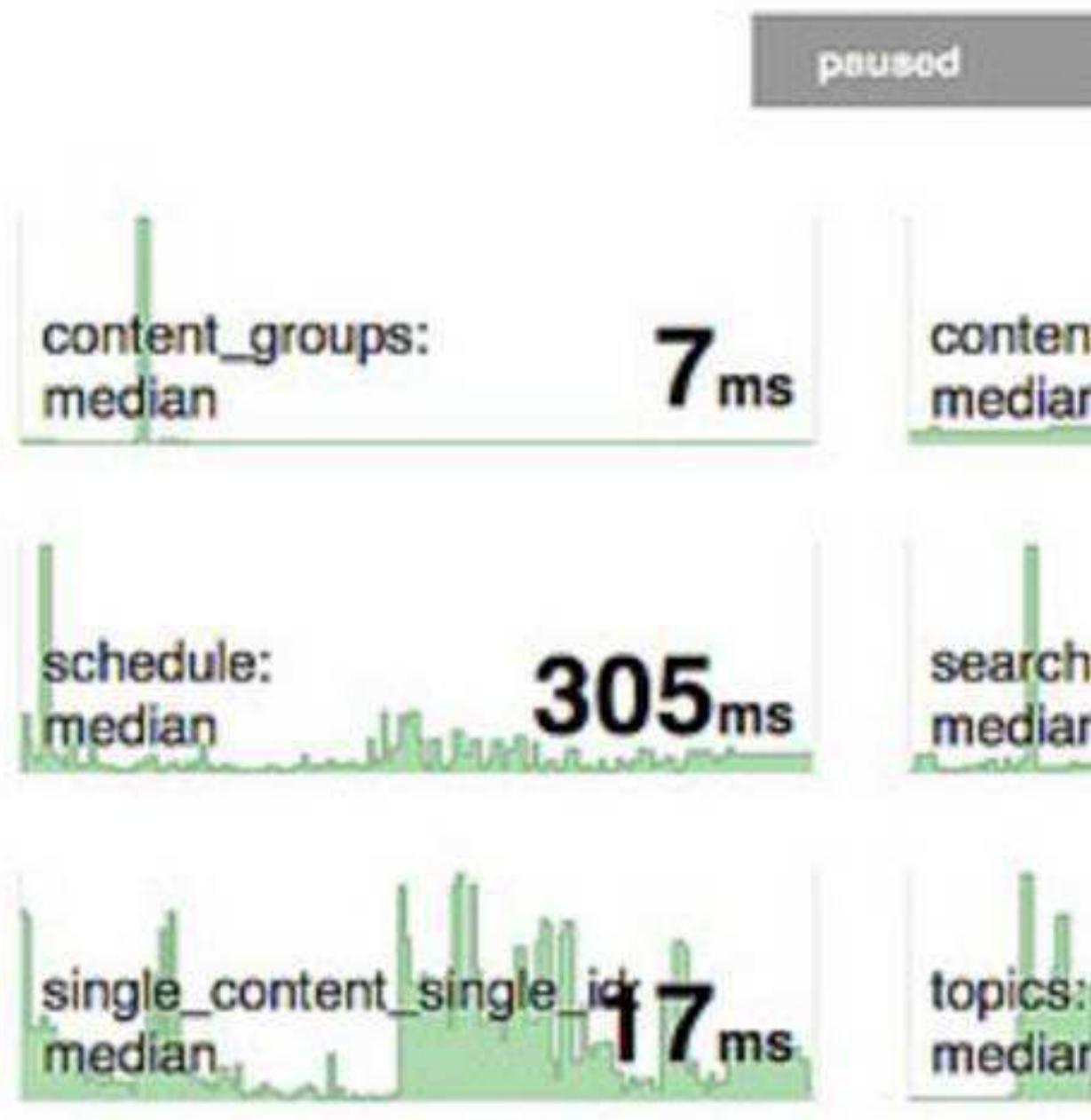
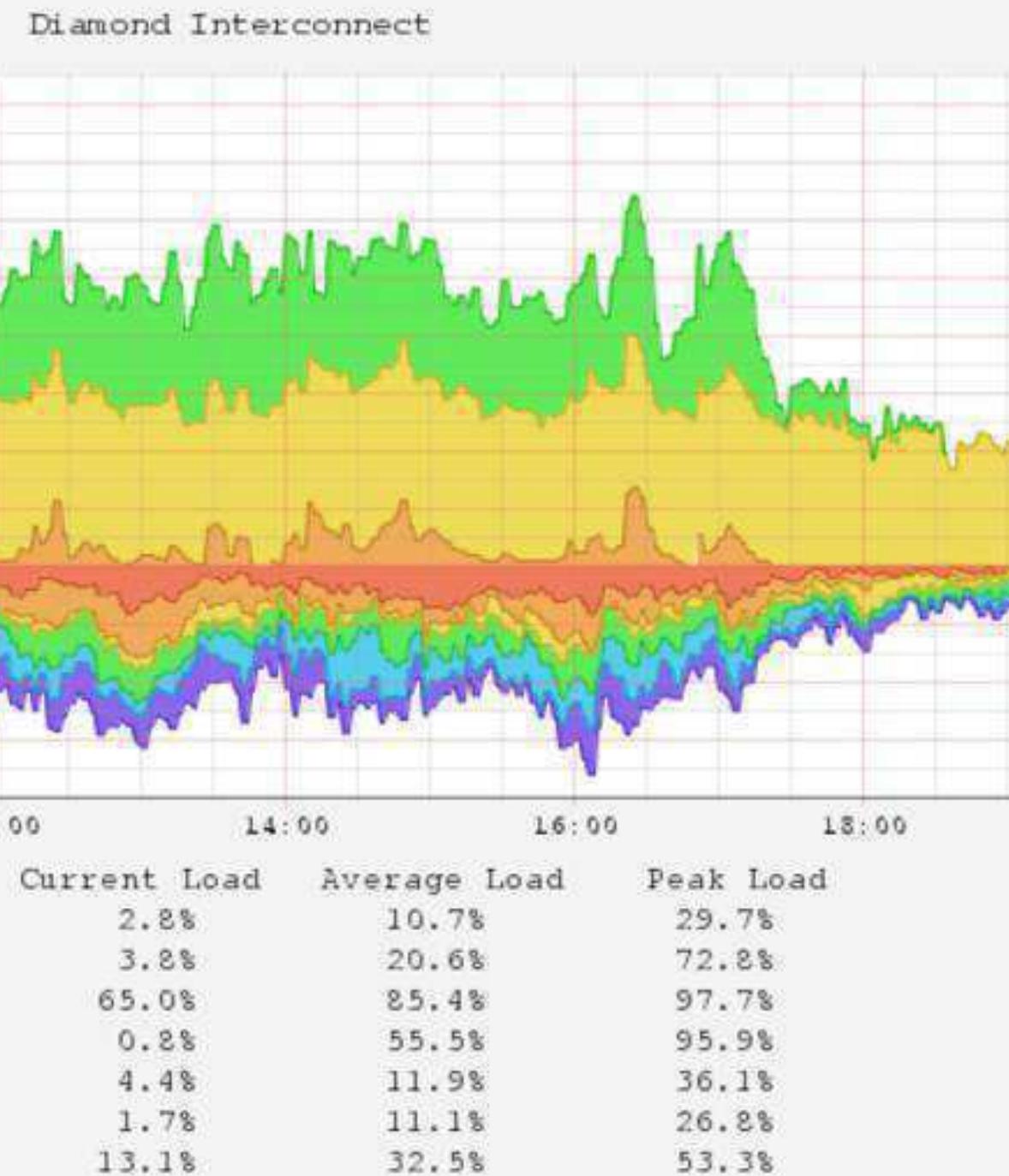


MEASURE  
WHATEVER  
MAKES  
FUCKING  
SENSE!





# VISUALIZE IT!



# VISUALIZE

#MONITORINGLOVE



# AUTOMATION





SCALE



# TOOLS LOVE



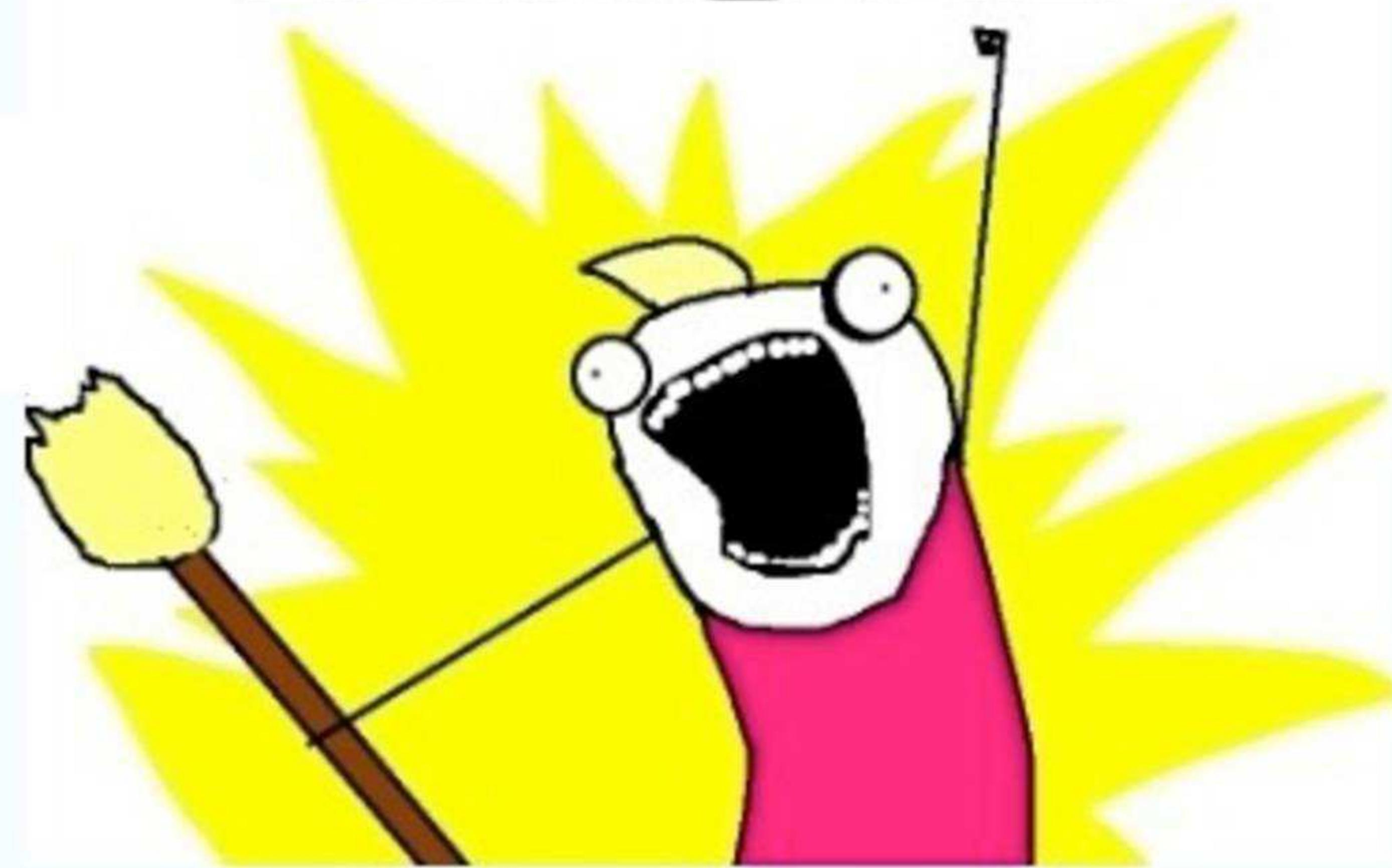
# DATABASES

# PROGRAMMING LANGUAGES

# 3RD-PARTY TOOLS

# QUEUES

# KNOW



## ALL THE THINGS!

memegenerator.co



FAILURE IS  
GOOD

---



**BE AGILE**



# FEEDBACK

---



# METHODS



**KEEP  
LEARNING**

# THANK YOU!



@CodeStars



# Sources:

- ♥ <http://nikic.github.io/2011/12/27/Dont-be-STUPID-GRASP-SOLID.html>
- ♥ [http://en.wikipedia.org/wiki/SOLID\\_\(object-oriented\\_design\)](http://en.wikipedia.org/wiki/SOLID_(object-oriented_design))
- ♥ <http://www.shutterstock.com>
- ♥ <http://icomoon.io/app/>
- ♥ <http://apievangelist.com/2012/01/12/the-secret-to-amazons-success-internal-apis/>
- ♥ [http://en.wikipedia.org/wiki/Structural\\_pattern](http://en.wikipedia.org/wiki/Structural_pattern)
- ♥ [http://en.wikipedia.org/wiki/Creational\\_pattern](http://en.wikipedia.org/wiki/Creational_pattern)
- ♥ [http://en.wikipedia.org/wiki/Behavioral\\_pattern](http://en.wikipedia.org/wiki/Behavioral_pattern)
- ♥ [http://www.eecs.berkeley.edu/~rcs/research/interactive\\_latency.html](http://www.eecs.berkeley.edu/~rcs/research/interactive_latency.html)
- ♥ <http://bfwa.com/pitfalls/>
- ♥ [http://farm9.staticflickr.com/8491/8344781525\\_5787255ec2\\_z.jpg](http://farm9.staticflickr.com/8491/8344781525_5787255ec2_z.jpg)
- ♥ [http://docs.hostedgraphite.com/\\_images/sample\\_dashboard\\_conc\\_users\\_advanced.png](http://docs.hostedgraphite.com/_images/sample_dashboard_conc_users_advanced.png)
- ♥ <http://oss.oetiker.ch/rrdtool/gallery/btdmd8.png>
- ♥ <http://www.wadsam.com/wp-content/uploads/2012/11/stock-exchagne.jpeg>
- ♥ [http://s3.amazonaws.com/crunchbase\\_prod\\_assets/assets/images/original/0018/2843/182843v2.png](http://s3.amazonaws.com/crunchbase_prod_assets/assets/images/original/0018/2843/182843v2.png)
- ♥ [http://2.bp.blogspot.com/-t2FW5rx\\_yn0/TxVwhmqAXgI/AAAAAAA7s/DSdFmMZ5ecM/s1600/trading-floor.jpg](http://2.bp.blogspot.com/-t2FW5rx_yn0/TxVwhmqAXgI/AAAAAAA7s/DSdFmMZ5ecM/s1600/trading-floor.jpg)
- ♥ [http://en.wikipedia.org/wiki/Mutual\\_exclusion](http://en.wikipedia.org/wiki/Mutual_exclusion)



**Thanks to all the people  
helped me so much!**

Elena ♥ Fridel  
Ingo Spring  
Nils Jimdo!



#that   CONFERENCE™  
summer camp for geeks

August 11<sup>th</sup> – 13<sup>th</sup> 2014  
Same Place, Same Time